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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,677	12/17/2003	Yun Bok Lee	8733.977.00-US	4107

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EXAMINER

VANORE, DAVID A

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/736,677	LEE ET AL.	
	Examiner	Art Unit	
	David A. Vanore	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 11-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed July 7, 2006 have been fully considered but they are not persuasive.
2. In reply to the previous Office action, applicant has amended independent claims 1 and 14 to further require that irradiated ions follow paths that are substantially parallel and straight. This limitation is addressed in the section addressing claim 1 below. Applicant has traversed the rejection of all claims on the grounds that the prior art previously relied upon fails to teach or suggest the newly added limitation.
3. The limitation is contained in the Maishev et al. reference, previously relied upon.
4. The amendment to claim 14 inserting the term "substantially" has cured the previously set forth objection to the claim. The objection to claim 14 has been withdrawn.
5. The amendment to the drawing has similarly cured the previously set forth the objection applied to the Figures. The drawings are now in proper form.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 8, and 11-13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Maishev et al. (USPN 6,236,163).

8. Regarding claim 1, Maishev et al. teaches an ion implantation device comprising a holder (265), an ion beam path (Note Fig. 5), and an array of ion beam sources (ICH1), where an ion beam is discharged from the source and has a range of incidence angles being greater than zero, as the ion beams IB1 and IB2 have the configuration of a conical tube, as illustrated and disclosed, and where the emitting surface is inclined to be substantially parallel with the substrate, where irradiated ions follow paths that are substantially parallel and straight (Note the parallel central beam axes of ion beam emitted by the plural sources in Fig. 5 for example.)

9. Regarding claim 2, Maishev et al. teaches that a working gas is injected into the chamber, an ionizer breaks down the gas, a discharger discharges the ions as the ion beam, and that an accelerator, in accelerating gaps G1 and G2 for instance, accelerates the beam towards the substrate, Note Col. 8.

10. Regarding claims 3-5, as depicted in Fig. 5, the accelerator slits, ionization, and discharge means are disposed parallel to the substrate.

11. Regarding claim 8, Maishev et al. teaches the use of argon as an inert gas (Col. 3 Lines 10-11).

12. Regarding claims 11-13, Maishev et al. teaches the irradiation of a substrate where the angle of incidence of an ion beam is between 10-20 degrees, 40-50 degrees, and 40-60 degrees, note Col. 7.

13. Claim 1, 2, and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Berkowitz (USPN 4,449,051).

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14. Berkowitz teaches an ion beam irradiation system having a substrate on a holding means (Proximate to Item 36 in Fig. 1), an ion beam path traced by ion beam (18) in Fig. 1, and an ion beam source (Depicted as the apparatus to the right of Label 45 in Fig. 1) where the angle of incidence is greater than zero to avoid crystal channeling effects (Col. 1 Lines 38-43), and the emitting surface of the ion beam source depicted as the aperture downstream of Item 42 is substantially parallel to the wafer surface, an ionizer (8) which ionizes an injected gas (6), a discharger (42), and an acceleration means (26), where the acceleration and discharge means are substantially parallel to the substrate, and the ionizer is inclined at an angle different from the acceleration and discharge means.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 7 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maishev et al. (USPN 6,236,163) in view of Chaudhari et al.

17. Maishev et al. teaches all the required limitations of claims 1 and 15-19 as pointed out above.

18. Maishev et al. fails to teach a substrate having an alignment layer thereon.

19. Chaudhari et al. teaches an ion implantation apparatus where the sample has an alignment layer thereon.

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20. Chaudhari et al. modifies the prior art of Maishev et al. to incorporate a substrate into the ion beam irradiation apparatus of Maishev et al. where the substrate has an alignment layer thereon.

21. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an alignment layer on a substrate in an ion beam irradiation apparatus because an alignment layer, or induced anisotropy, on the substrate surface induces the generation of a multidomain structure which increases the viewing angle of liquid crystal display fabricated from the implanted substrate (Note Col. 1 of Chaudhari et al.).

Conclusion

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Vanore whose telephone number is (571) 272-2483. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



David A Vanore
Primary Examiner
Art Unit 2881

dav